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PATENT SPECIFICATION 1,103,059

NO DRAWINGS.

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COMPLETE SPECIFICATION.

Improvements in or relating to Temperature Sensitive Substances.

We, ROLLS ROYCE LIMITED, a British Company, of Nightingale Road, Derby, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to temperature sensitive substances and is concerned with an additive for temperature sensitive paint of the "red-scarlet-chrome" type which usually contains three basic constituents, namely lead chromate, magnesium carbonate and silica, and changes colour at one or more temperatures.

It is an object of the present invention to provide an additive for such paints which will improve the bonding properties of the paint, improve the paint's resistance to erosion, and also enable the temperatures at which the paint changes colour to be varied.

According to the present invention an additive for a temperature sensitive paint of the kind referred to comprises a solution containing ferrous iron, a mineral acid, a water soluble alcohol and ethyl silicate.

Preferably the ferrous iron is ferrous chloride.

Preferably the mineral acid is hydrochloric acid and the water soluble alcohol is methylated spirits.

According to a feature of the present invention, a method of preparing an additive for a temperature sensitive paint of the kind referred to comprises the steps of dissolving ferrous iron in a mineral acid, mixing a water soluble alcohol with ethyl silicate and adding the former solution to the latter solution.

Preferably the additive is added to the temperature sensitive paint substantially in the proportions 3 parts of additive, 8 parts of paint and 5 parts of a suitable thinners.

The preparation of an additive in accordance with the invention will now be described by way of example.

An acid ferrous chloride solution is prepared by weighing out 9.6 grams of ferrous chloride into a suitable container and adding aproximately 100ml of tap water. 21mls of concentrated hydrochloric acid are added to dissolve the ferrous chloride, and when all the ferrous chloride has dissolved a further 434 mls of tap water is added and the solution thoroughly mixed.

78cc of industrial methylated spirits is put into a further container and to this is added 70cc of ethyl silicate. This solution is thoroughly shaken to ensure adequate mixing and then 18cc of the acid ferrous chloride solution is added and the mixture again agitated. The temperature of this solution rises to between 35° and 40°C due to hydrolisation of the ethyl silicate and is allowed to cool to room temperature before use.

A quantity of the additive was added to a temperature-sensitive paint having the following composition by weight:—

Lead chromate	$PbCrO_4$	34.49%
Lead Molybdate	$PBMoO_4$	4.66%
Lead sulphate	$PbSO_4$	7.46%
Magnesium carbonate	$MgCO_3$	29.20%
Silica	SiO_2	12.27%
Aluminium oxide	Al_2O_3	4.13%
Sodium carbonate	Na_2CO_3	1.51%
Ferric oxide	Fe_2O_3	1.72%

The additive was mixed with the paint in the proportions 3 parts additive to 8 parts of paint to 5 parts of a suitable thinners.

and was found to improve both the bonding and the erosion resistance of the paint.

The temperatures at which the paint normally changes colour were found to be altered when the additive was included, and differing preparations of the additive caused the paint to change colour at differing temperatures.

WHAT WE CLAIM IS:—

1. An additive for a temperature sensitive paint of the kind referred to comprising a solution containing ferrous iron, a mineral acid, a water soluble alcohol and ethyl silicate.

2. An additive as claimed in Claim 1 wherein the ferrous iron is in the form of ferrous chloride.

3. An additive as claimed in Claim 1 or 2 wherein the mineral acid is hydrochloric acid.

4. An additive as claimed in any of Claims 1—3 wherein the water soluble alcohol is methylated spirits.

5. A method of preparing an additive for a temperature sensitive paint of the kind referred to comprising the steps of dissolving ferrous iron in a mineral acid, mixing a water soluble alcohol with ethyl silicate and adding the former solution to the latter solution.

6. An additive as claimed in any of Claims 1—4 and substantially as hereinbefore described.

7. A method of preparing an additive as claimed in Claim 5 and substantially as hereinbefore described.

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